Standards, the Humanities, and Design

Strategies for Student Engagement

Andrew L. Russell, Ph.D. **Lee Jared Vinsel, Ph.D.**

Program in Science & Technology Studies
College of Arts & Letters

STEVENS
INSTITUTE of TECHNOLOGY
THE INNOVATION UNIVERSITY®

Our Goals

Introduce a wide variety of students to standards and standardization

Highlight and nurture personal connections

Increase the quality, quantity, and diversity of the standards workforce

Curriculum Development at Stevens

1. HST 380, Standardization and Society

- Credit toward STS and Sci Comm majors
- Upper-level Humanities credit for everyone else

2. Design Spine

- 8-semester sequence of courses required for all engineering undergraduates
- Flexible content modules (2-3 weeks, 2 hours per session) on “Standards and Innovation”

HST 380, Standardization and Society

HST 380 provides an interdisciplinary overview of the place of standardization in modern societies. Students will explore how standards play important roles in shaping their lives as consumers and citizens, as well as how they might participate in the development and use of standards in technical and social fields.

14 weeks, one 2.5 hour session per week

HST 380, Standardization and Society

Syllabus Highlights:
Week 1: Simulation Game
Weeks 2-3: Analytical Tools
Weeks 4-6: Engineering, Computers, the Internet
Week 7: Guest lecture – Lisa Rajchel and John Day
Weeks 8-11: Biology, Medicine, Life Insurance, Automobiles, Food
Week 12: Simulation Game
Week 13: Student Presentations
Week 14: Assessment!

Weekly student blogs:
stevensstandardsandsociety.blogspot.com

HST 380, Standardization and Society

Goal: Convince a wide diversity of students to care about standardization

Opportunities: Collaboration within Stevens and with other universities and organizations

- IEEE-SA
- ANSI
- ASTM
- Stevens engineering and business faculty

Surprises: New majors and minors in STS; new topics for research

Design Spine

An 8-semester sequence of courses required of all engineering majors at Stevens (~500/year)

Purpose: to develop competencies in creative thinking, problem solving, teamwork, economics of engineering, project management, communication skills, ethics, environmental awareness, and systems thinking.

Ongoing reforms: infuse Design Spine with emphasis on innovation and entrepreneurship

Need: fresh content modules that engage students

Design Spine

Design for Standardization: General Overview

1. Look around: what standards do you see, and what do we know about them?
2. How can you learn about the standards you see?
3. What values do standards embody? What are the tradeoffs between costs and benefits?
4. Where are standards in *your* design project, and what values do they promote?

What can you do if you don't like the standards, or if you want to promote different values?

Design Spine

Design for Standardization:
Civil, Oceanic, and Environmental Engineering

1. Lecture on Innovation, Disasters, and Standards
2. Assignment: Disasters in History
3. Discussion: What standards emerged as responses to disasters? How?

Design Spine

Design for Standardization:
Chemical Engineering & Materials Science

1. Lecture on Innovation and Standardization
2. Assignment: Standards for 3D Printing
3. Discussion: What is the relationship between innovation, creativity, and standardization?

Design Spine

Design for Standardization: Future plans

1. Modules need to be discipline-specific
2. Potential collaboration:
   - Electrical and Computer Engineering (leverage IEEE History Center at Stevens)
   - Physics and Engineering Physics
3. Challenges:
   How can we scale up?
   Videos and multimedia?
   Closer contact with engineering faculty?

Engagement Strategies

Start with something familiar

Connect with values that matter to students

Provide conceptual tools for students to appreciate the power of standards

Appeal to the priorities of faculty in various engineering disciplines

To collaborate, critique, or learn more:

Andrew L. Russell (arussell@stevens.edu)

Lee Vinsel (lvinsel@stevens.edu)

This work was performed under cooperative agreement No. 70NANB13H207 from U.S. Department of Commerce, National Institute for Standards and Technology

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